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The Third BenchCouncil International Symposium on Intelligent Computers, Algorithms, and Applications (IC 2023) Call for Papers

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ABSTRACT

Sponsored and organized by the International Open Benchmark Council (BenchCouncil), the IC conference is to provide a pioneering technology map through searching and advancing state-of-the-art and state-of-the-practice in processors, systems, algorithms, and applications for machine learning, deep learning, spiking neural network and other AI techniques across multidisciplinary and interdisciplinary areas. IC 2023 invites manuscripts describing original work in the above areas and topics. All accepted papers will be presented at the IC 2023 conference and published by Springer CCIS (Indexed by EI). The IC conferences have been successfully held for two series from 2019 to 2022 and attracted plenty of paper submissions and participants. IC 2023 will be held on December 4-6, 2023 in Sanya and invites manuscripts describing original work in processors, systems, algorithms, and applications for AI techniques across multidisciplinary and interdisciplinary areas. The conference website is https://www.benchcouncil.org/ic2023/.

Important Dates:
Paper Submission: July 31, 2023, at 11:59 PM AoE
Notification: September 30, 2023, at 11:59 PM AoE
Final Papers Due: October 31, 2023, at 11:59 PM AoE
Conference Date: December 4-6, 2023
Submission Site: https://ic2023.hotcrp.com/

1. Introduction

The mission of IC 2023 is to provide a pioneering technology map through searching and advancing state-of-the-art and state-of-the-practice in processors, systems, algorithms, and applications for machine learning, deep learning, spiking neural network and other AI techniques across multidisciplinary and interdisciplinary areas. The BenchCouncil staff will invite worldwide contributors to showcase their superior chips, systems, algorithms and applications. IC 2023 also solicits manuscripts describing original work in the above areas.

IC 2023 invites manuscripts describing original work in the above areas and topics. All accepted papers will be presented at the IC 2023 conference and published by **Springer CCIS (Indexed by EI)**. With generous support from BenchCouncil, IC 2023 will offer travel grants for students to defray a portion of their travel costs. The size and number of these grants will vary depending on funding availability, the number of student applicants, and their respective priority. Grant awards will be made before the early registration deadline; expenses will be reimbursed after the conference; grant recipients will be asked to submit original receipts to verify their expenditures as well as a 1-page summary of their involvement during the conference. While we encourage all in need of a travel grant to apply, the selection process will give higher priority to students who would otherwise not be able to attend the conference. We strongly encourage applications from students that belong to under-represented groups.

2. Call for papers

The IC conference encompasses a wide range of topics in intelligent computers, algorithms, and applications in computer science, civil aviation, medicine, finance, education, etc. IC's multidisciplinary and interdisciplinary emphasis provides an ideal environment for developers and researchers from different areas and communities to discuss practical and theoretical work. The topics of interest include, but are not limited to the following:

AI Algorithms
machine learning (deep learning, statistical learning, etc.)
natural language processing
computer vision
data mining
multiagent systems
knowledge representation
robotics
search, planning, and reasoning

AI Systems
Scalable and distributed AI systems
High-performance computing for AI
System-level optimization for deep learning
Efficient hardware architectures for AI

https://doi.org/10.1016/j.tbench.2023.100123

Model compression and acceleration techniques
Memory management and resource allocation in AI systems
Real-time and edge AI systems
AutoML and automated system design
Benchmarking and evaluation of AI systems
Observability of AI systems
Edge computing for AI systems
Reliability of AI systems
GPU sharing
Intelligent Operations of AI systems
Graph computing systems
Domain-specific AI systems
Serverless architecture for AI systems

AI for Ocean Science and Engineering

Ocean Front Detection
Mesoscale Eddy Recognition
Underwater Image Enhancement
Underwater Image Super-Resolution
Underwater Object Recognition, Detection and Tracking
Sea Surface Height Estimation
Sea Surface Temperature Estimation
Internal Wave Identification
Wave Height Estimation

AI in Finance

Applications of AI in finance: such as capital markets, investment and financing in real economy, risk management, investment decision-making, transaction execution, etc.
Impact of AI on the financial industry: discuss the influence of AI in the financial industry, such as improving efficiency, reducing risks, and optimizing customer experience.
Challenges and opportunities for AI: Explore the technical, ethical, regulatory, and other challenges faced by AI in the financial field, and how to overcome them.
Sustainable development of intelligent finance: explore how to promote the development of finance industry with extensive AI application while maintaining the principles of sustainable development.
Ethics and transparency: explore the ethical and transparency issues raised by AI in the financial field.

AI for Education

Position papers on AI for education
Large language models for education
AI models of teaching and learning
AI-assisted education
Innovative applications of AI technologies in education
Evaluation of AI technologies in education
Intelligent tutoring systems
Human–computer collaborative education systems
Ethics and AI in education
Impacts of AI technologies on education

AI for Law

Argument mining on legal texts
Automatic classification and summarization of legal text
Computational methods for negotiation and contract formation
Computer-assisted dispute resolution
Computable representations of legal rules and domain-specific languages for the law
Decision support systems in the legal domain
Deep learning on data and text from the legal domain
E-discovery, e-disclosure, e-government, e-democracy and e-justice
Ethical, legal, fairness, accountability, and transparency subjects arising from the use of AI systems in legal practice, access to justice, compliance, and public administration
Explainable AI for legal practice, data, and text analytics Formal and computational models of legal reasoning (e.g., argumentation, case-based reasoning), including deontic logics)
Formal and computational models of evidential reasoning
Formal models of norms and norm-governed systems
Information extraction from legal databases and texts
Information retrieval, question answering, and literature recommendation in the legal domain
Intelligent support systems for forensics
Interdisciplinary applications of legal informatics methods and systems
Knowledge representation, knowledge engineering, and ontologies in the legal domain
Legal design involving AI techniques
Machine learning and data analytics applied to the legal domain
Normative reasoning by autonomous agents
Open and linked data in the legal domain
Smart contracts and application of blockchain in the legal domain
Visualization techniques for legal information and data

AI for Materials Science and Engineering

AI for materials chemistry
AI for materials physics
AI for materials characterization
AI for materials design
AI for materials manufacturing and processing
AI for materials in industry

AI for Sciences

Applications of machine learning in scientific research: Explore the application of machine learning algorithms in scientific data analysis, pattern recognition, classification, and prediction. This includes innovative research in emerging fields such as quantum computing, materials science, climate change, drug discovery, genomics, physics simulation, environmental protection, sustainable energy, and healthcare. For example, using AI techniques to construct complex models and simulate the behavior of natural systems, exploring scientific questions related to climate simulation, cosmological simulation, molecular dynamics simulation, and more.
Assisting experiment design and optimization: Utilize AI to optimize experiment design and parameter optimization, improving experiment efficiency. For example, rapidly determining optimal experimental conditions and reducing the time and cost of experiments.
Natural language processing and scientific literature mining: Explore the application of natural language processing techniques in scientific literature analysis, knowledge graph construction, text summarization, and information extraction, accelerating the dissemination and discovery of scientific knowledge.
Data visualization and scientific communication: Discuss the latest methods and tools for visualizing scientific data and presenting scientific results using AI technology, promoting the communication and sharing of scientific research findings. AI plays a critical role in scientific data analysis. Machine learning and statistical methods can extract useful information and patterns from large-scale scientific datasets, assisting scientists in data mining, feature extraction, data dimensionality reduction, and other tasks.

AI for Civil Aviation

AI in Aircraft Maintenance, Repair and Overhaul (MRO)
AI in Operations Management and Revenue Optimization against safety control
AI in Customer Service and Engagement
AI in Aircraft Design Optimization
AI in Identification of Passengers
Pitfalls of using AI in Aviation
The integrity, Metadata integration architecture, effectiveness, consistency, standardi-zation, openness and sharing management of the civil aviation data

Digital Business of civil aviation, quality management of Civil Aviation data
Digital Air-Control Management and Digital Surveillance Management of Civil Aviation

AI for Medicine

Medical AI and Interpretable Medical Models
AI, Block Chain, Cloud, and Data Techniques for Medicine
Big Medical data and Privacy Protection
Artificial Intelligence and Medical Image Analysis
Internet-based Medical Diagnosis
Medical Robot
Drug discovery and Computer-aided Design
Artificial Intelligence in Medical Diagnosis
Medical Data and AI Practice and Case Study

AI for Space Science and Engineering

Space science target prediction, detection and feature extraction based on AI technology
Uncertain analysis of AI models in space science
Physics-informed machine learning in space science
AI surrogate of the physics models
How to gain new knowledge from the space science AI models
Foundation models in space science
Use AI technology to assist in space mission planning and scheduling
AI-assisted space satellite anomaly detection and emergency decision-making

AI for High Energy Physics

Machine learning methods or models for HEP, including event triggering, particle identification, fast simulation, event reconstruction, noise filtering, detector monitoring, and experimental control.
Utilizing high-performance computing for implementing machine learning methods in HEP, such as feature detection, feature engineering, usability, interpretability, robustness, and uncertainty quantification.
Optimizing machine learning models on large-scale HEP simulation or experimental datasets.
Deepening the modeling and simulation of HEP scientific problems using machine learning techniques.
Harnessing emerging hardware (e.g., GPUs, NPUs, FPGAs) to accelerate machine learning processes for HEP data.
Applications of large-scale language models in machine learning for HEP.
Applications of quantum machine learning in machine learning for HEP.

AI and Security

Security and Privacy of AI
Fairness, interpretability, and explainability for AI
AI Regulations
Adversarial learning
Membership inference attacks
Data poisoning & backdoor attacks
Security of deep learning systems
Robust statistics
Differential privacy & privacy-preserving data mining
AI for security and privacy
Computer forensics
Spam detection
Phishing detection and prevention
Botnet detection
Intrusion detection and response
Malware identification and analysis
Intelligent vulnerability fuzzing
Automatic security policy management & evaluation
Big data analytics for security

3. Paper submission

Papers must be submitted in PDF. For a full paper, the page limit is 15 pages in the CCIS format, not including references. For a short paper, the page limit is 8 pages in the CCIS format, not including references. Authors are also encouraged to submit a 4-page extended abstract and make an extension after acceptance.

The review process follows a strict double-blind policy. The submissions will be judged based on the merit of the ideas rather than the length. After the conference, the proceeding will be published by **Springer CCIS (Indexed by EI)**. Please note that the CCIS format (LaTexTemplate) is the final one for publishing.

At least one author must pre-register for the conference, and at least one author must attend the conference to present the paper. Papers for which no author is pre-registered will be removed from the proceedings.

Please make sure your submission satisfies ALL of the following requirements:

* All authors and affiliation information must be anonymized.
* Paper must be submitted in printable PDF format.
* Please number the pages of your submission.
* The submission must be formatted for black-and-white printers. Please make sure your figures are readable when printed in black and white.
* The submission must describe unpublished work that is not currently under review at any other conference or journal venues.

LaTex Template: https://www.benchcouncil.org/file/llncs2e.zip

4. Past IC conferences and proceedings

The IC conference has been successfully held for two series, from 2019 to 2022. Their websites and proceedings are as follows.

* **IC 2020** Website: https://www.benchcouncil.org/conferences/ficc/2020/ic20/ic20_en.html
  Proceeding [1]: https://link.springer.com/book/10.1007/978-981-16-1160-5
* **IC 2019** Website: https://www.benchcouncil.org/conferences/ficc/2019/ic19/ic19_en.html

5. Review rules

To reflect fairness, we will treat each article under the same rules. This set of review ethics is derived and based on the MICRO 2020 [2], ASPLOS 2020-2021 [3,4], ISCA 2020-2021 [5,6] review guidelines, and the details are as follows:

(1) The online discussion is blind. While the reviewers discuss the papers, they don't know others' identities beyond reviewer #A, #B. Hence, a single reviewer cannot easily assert seniority and silence other voices or influence them beyond the strength of their arguments.
(2) When the reviewers point out closeness to prior work that informs the reviewer's decision to lower the novelty and contribution of a paper, they should provide a full citation to that prior work.
(3) When the reviewers asking authors to draw a comparison with concurrent work (e.g., work that was published or appeared online *after* the paper submission deadline) or with preliminary work (e.g., a poster or abstract that is not archival), this comparison should not inform a lower score by the reviewer.
(4) Provide useful and constructive feedback to the authors. Be respectful, professional, and positive in your reviews and provide suggestions for the authors to improve their work.

(5) Score the paper absolutely and relative to the group of papers you are reviewing.
Absolute overall merit - There are four grades you can give to each paper for absolute overall merit; the top 2 ratings mean that you think the paper is acceptable to the conference and the bottom 2 ratings mean that in your opinion the paper is below the threshold for the conference. Please assign these values thinking, whether the paper is above the threshold for the conference or below.
Relative overall merit – is based on the papers that you are reviewing. You can rank your papers and then group the papers into the four bins. Except for fractional errors, you should be dividing your papers equally into the four categories.
(6) Reviewers must treat all submissions as strictly confidential and destroy all papers once the technical program has been finalized.
(7) Reviewers must contact the PC chair or EIC if they feel there is an ethical violation of any sort (e.g., authors seeking support for a paper, authors seeking to identify who the reviewers are).
(8) Do not actively look for author identities. Reviewers should judge a paper solely on its merits.
(9) If you know the authors, do not publicize the authors. If you would like to recuse yourself from the review task, contact the PC Chair.
(10) Reviewers should review the current submission. If you have reviewed a previous submission, make sure your review is based on the current submission.
(11) Reviewers must not share the papers with students/colleagues.
(12) Reviewers must compose the reviews themselves and provide unbiased reviews.
(13) Do not solicit external reviews without consulting the PC chairs or EIC. If you regularly involve your students in the review process as part of their Ph.D. training, contact the PC chairs. You are still responsible for the reviews. You may do this on no more than one of your reviews.
(14) Reviewers must keep review discussions (including which papers you reviewed) confidential.
(15) Do not discuss the content of a submitted paper/reviews with anyone other than officially on the submission management system like HotCRP or EasyChair during the online discussion period or the PC meeting (from now until paper publication in any venue).
(16) Do not reveal the name of paper authors in case reviewers happen to be aware of author identity. (Author names of accepted papers will be revealed after the PC meeting; author names of rejected papers will never be revealed.)
(17) Do not disclose the outcome of a paper until its authors are notified of its acceptance or rejection.
(18) Do not download or acquire material from the review site that you do not need access to.
(19) Do not disclose the content of reviews, including the reviewers' identities or discussions about a paper.

6. Committees

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Acknowledgment

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[2] Online, micro2020, 2020, URL: https://www.microarch.org/micro53/.
[3] Online, asplos2020, 2020, URL: https://asplos-conference.org/2020/index.html.
[4] Online, Asplos2021, 2021, URL: https://asplos-conference.org/2021/index.html.
[5] Online, isca2020, 2020, URL: https://iscaconf.org/isca2020/.
[6] Online, isca2021, 2021, URL: https://iscaconf.org/isca2021/.